

IN THE CLAIMS:

Claims 1, 3, 5, 9, and 19 have been amended herein. All of the pending claims 1 through 25 are presented below. This listing of claims will replace all prior versions and listings in the application. Please enter these claims as amended.

1. (Original) A slurry for use in polishing a copper structure of a semiconductor device, the slurry being substantially free of abrasives and formulated to substantially concurrently polish copper and a barrier material with the barrier material being removed at substantially the same rate as or at a slower rate than copper is removed.
2. (Original) The slurry of claim 1, being formulated for use with a fixed-abrasive polishing pad comprising at least one of aluminum dioxide, titanium dioxide, silicon dioxide, and cerium dioxide.
3. (Currently Amended) The slurry of claim 1, being formulated to oxidize copper at substantially the same rate as or at a faster rate than ~~said tungsten~~ the barrier material is oxidized.
4. (Currently Amended) The slurry of claim 1, wherein, in ~~said~~ the slurry, the barrier material and copper have substantially the same oxidation energies.
5. (Currently Amended) The slurry of claim 4, wherein, in ~~said~~ the slurry, the barrier material has an oxidation energy of about 0.25 V more to about 0.20 V less than an oxidation energy of copper ~~in said slurry~~.
6. (Currently Amended) The slurry of claim 1, wherein, in ~~said~~ the slurry, a rate of removal of the barrier material is up to about ten times slower than a rate of removal of copper.

7. (Currently Amended) The slurry of claim 1, wherein, in ~~said~~ the slurry, a rate of removal of the barrier material is about two to about four times slower than a rate of removal of copper.

8. (Currently Amended) The slurry of claim 1, wherein ~~said~~ the slurry is formulated to remove copper and the barrier material without substantially dissolving the barrier material that underlies remaining portions of copper.

9. (Currently Amended) The slurry of claim 1, wherein ~~said~~ the slurry comprises at least one oxidizer, at least one pH control agent, and at least one inhibitor.

10. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one oxidizer comprises at least one of an ammonium compound, a nitrate compound, and an amine compound.

11. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one oxidizer comprises at least one of hydrogen peroxide, potassium iodate, potassium permanganate, ammonium persulfate, ammonium molybdate, ferric nitrate, nitric acid, potassium nitrate, and ammonia.

12. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one oxidizer comprises about 0.1% to about 20% of the weight of ~~said~~ the slurry.

13. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one oxidizer comprises about 0.1% to about 5% of the weight of ~~said~~ the slurry.

14. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one pH control agent comprises at least one of potassium hydrogen phthalate, ammonium acetate,

ammonium oxalate, ammonium carbamate, ammonium phosphate, ammonium hydrogen phosphate, ammonium dihydrogen phosphate, dibasic ammonium citrate, tribasic ammonium citrate, acetic acid, phosphoric acid, and sulfuric acid.

15. (Currently Amended) The slurry of claim 1, wherein ~~said~~ the slurry has a pH of about 2 to about 6.

16. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one inhibitor comprises at least one of an azole, an amine, and a ring compound.

17. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one inhibitor comprises at least one of benzenetriazole (BTA), mercaptobenzothiazole, tolytriazole, methylamine, diethylamine, pyridine, quinoline, dicyclohexamine nitrate, potassium silicate, ammonium borate, ammonium phosphate, and potassium dichromate.

18. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one inhibitor comprises about 0.05% to about 2% of the weight of ~~said~~ the slurry.

19. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the at least one inhibitor comprises about ~~0.05~~ 0.05% to about 0.2% of the weight of ~~said~~ the slurry.

20. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the slurry further comprises at least one complexing agent comprising at least one of glycine, ammonium citrate, ammonium phosphate, and ammonium acetate.

21. (Currently Amended) The slurry of claim 20, wherein ~~said~~ the at least one complexing agent comprises about 2% to about 15% of the weight of ~~said~~ the slurry.

22. (Currently Amended) The slurry of claim 20, wherein ~~said~~ the at least one complexing agent comprises about 3% to about 5% of the weight of ~~said~~ the slurry.

23. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the slurry includes: about 0.1% to 20% of ~~said~~ the at least one oxidizer, by weight of ~~said~~ the slurry; and about 0.05% to about 2% of ~~said~~ the at least one inhibitor, by weight of ~~said~~ the slurry.

24. (Currently Amended) The slurry of claim 9, wherein ~~said~~ the slurry includes: about 0.1% to about 5% of ~~said~~ the at least one oxidizer, by weight of ~~said~~ the slurry; and about 0.05% to about 0.2% of ~~said~~ the at least one inhibitor, by weight of ~~said~~ the slurry.

25. (Currently Amended) The slurry of claim 1, wherein ~~said~~ the slurry removes copper at a temperature of about 27° C. or cooler.